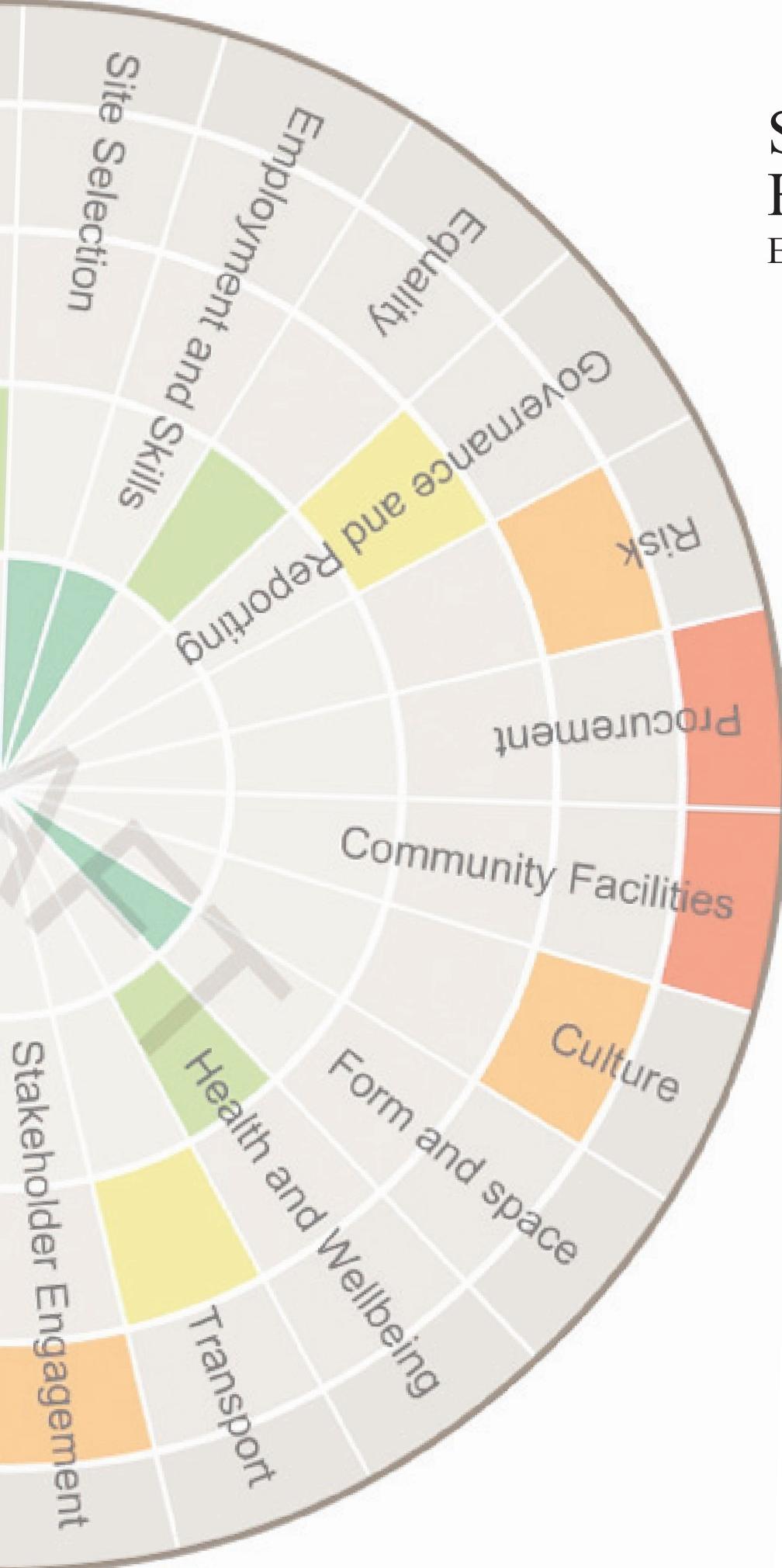


# SPeAR® Handbook 2012

External Version



ARUP

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# Foreword

SPeAR® (Sustainable Project Appraisal Routine) is a flexible and robust sustainability appraisal tool designed as a decision-making framework to support project development and communicate outcomes. Developed in-house by Arup's sustainability experts and software developers, the SPeAR® framework was first launched in 2000 and has since been used on over 100 projects in over 10 countries.



Following a major update and redesign of the framework and its software, 2011 has seen the global re-launch of SPeAR® and, in 2012, its release for licensing to users outside of Arup. With over 60 years experience as planners, designers and engineers, Arup is keen to see its sustainability appraisal tool deployed more widely to help achieve sustainability goals in a greater number of projects across the world.

The handbook contains useful information which:

- Introduces SPeAR® as a tool
- Explains the SPeAR® framework
- Describes the need for materiality reviews
- Outlines the SPeAR® process and explains how to use SPeAR®
- Describes how to navigate the software
- Provides contact information for support and feedback queries.

Arup offers a number of services that may be called on to complement and/or facilitate the SPeAR® appraisal process. A full list of these services can be found at the back of this manual.

We plan to continually improve SPeAR® and therefore welcome any feedback you have as a user from applying the tool to a project. Please email any comments to [spear@arup.com](mailto:spear@arup.com).

A handwritten signature in black ink, appearing to read "Jonathan Ben-Ami".

Jonathan Ben-Ami  
Director, Sustainability Consulting London

# 1 SPeAR® – Integrated Thinking

## 1.1 Introduction to sustainability & the SPeAR® framework

With sustainability moving up agendas across industry and government, and public awareness of sustainability issues ever increasing, being able to assess the sustainability impacts and opportunities of a project is vital. As such, there is a real need for tools to assist in the consideration of these key sustainability issues, particularly with regard to decision-making and communication with stakeholders. In response to this need, Arup has developed SPeAR® (Sustainable Project Appraisal Routine): a holistic, yet flexible sustainability appraisal tool.

This software-based tool is suitable for use on a wide variety of projects. The SPeAR® process encompasses an integrated quantitative and qualitative appraisal based on 23 core indicators of sustainability.

The outcomes are presented graphically on the SPeAR® diagram using a traffic light-type system (Figure 1) to indicate performance against key themes. The software

also generates a tabulated summary of the input data ensuring that the process is robust and auditable.

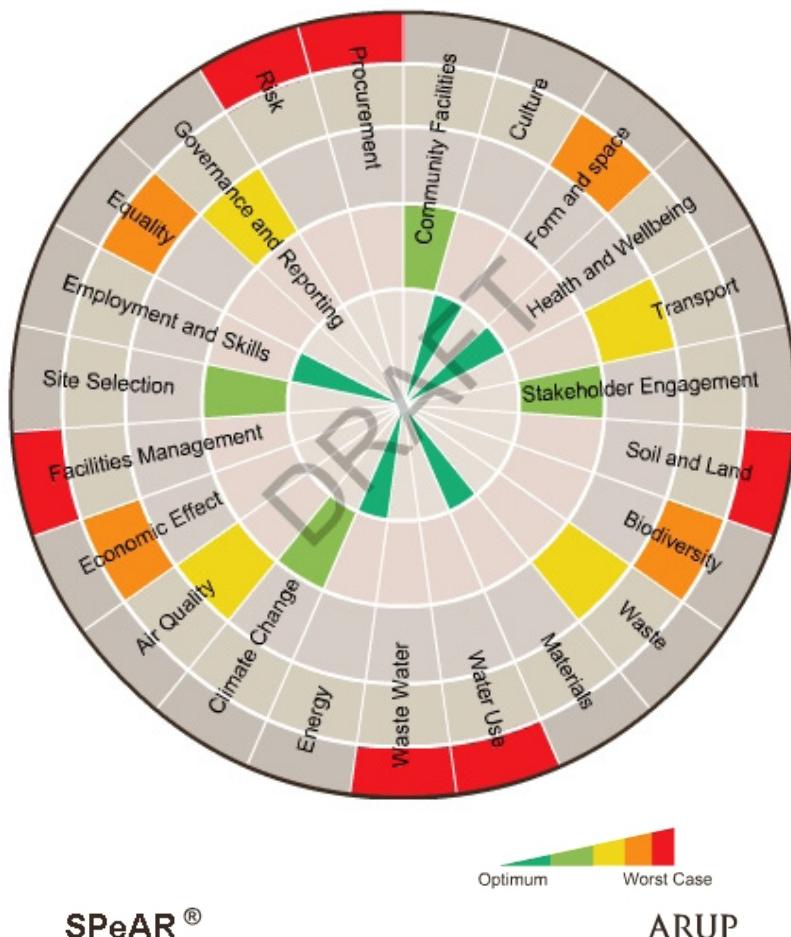
## 1.2 When is SPeAR® applicable?

SPeAR® has been developed so that it can be used to monitor and evaluate project performance and support informed decision making throughout the project life cycle. Early on in a project it might be used to carry out a baseline appraisal, gap analysis or identify key performance indicators.

During the design stage it can be used to compare and assess the pros and cons of various design options, identify key risk areas, guide decision-making and stakeholder participation, or assess the implications of design changes. It can also be used to undertake evaluation upon project completion and during operation which can inform organisational learning and approaches to future projects.

SPeAR® is designed to cover all forms of projects; including design and delivery of new infrastructure, masterplans and individual buildings. Further

**Figure 1** SPeAR® full colour diagram demonstrating the potential ratings across all indicators



background and information on using SPeAR® is provided in subsequent sections as well as information on the support services that are available.

### 1.3 Development of SPeAR®

In order to ensure that SPeAR® reflects international best practice, a number of other indicator sets and literature were reviewed, including:

- GRI G3 Indicators
- GRI Draft CRESS (Construction & Real Estate Sector Supplement)
- OECD, A Framework to measure the progress of societies
- UN Indicators of Sustainable Development
- UK Indicators for Sustainable Development
- The ‘Egan Wheel’ for Sustainable Communities
- Max Fordham Sustainability Matrix
- AGIC Rating Tool
- CEEQUAL
- BRE Regional Sustainability Checklist
- LEED
- Other Arup in-house tools
  - ASPIRE
  - CCAF

These sources were referred to throughout; initially to identify the appropriate segments, then the appropriate indicators and subsequently in drafting the new sub-indicators. References to these sources can be found in appendix B.

Arup sustainability experts from across the world were consulted throughout the development of SPeAR®, ensuring that the tool reflects best practice sustainability appraisal and is globally applicable. In addition, an Arup expert was identified to review each of the indicator topics (e.g. air quality, economic effect). This input helped to ensure we created a robust framework, reflecting leading edge knowledge and practice across a great breadth of topics.

### 1.4 Who can undertake SPeAR® appraisals?

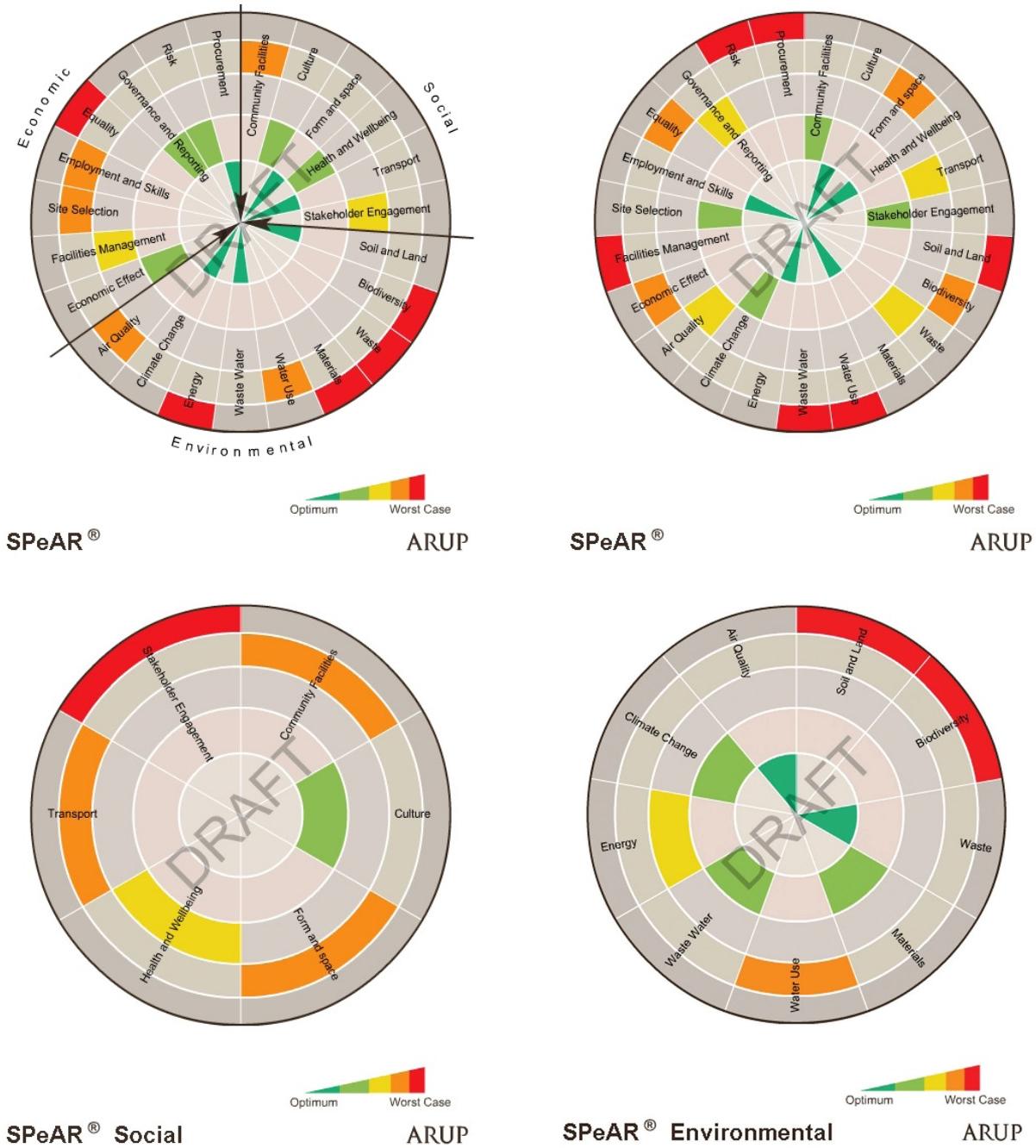
SPeAR® can be used across the globe, for projects from masterplanning to a port development, from a new road to an individual building. The SPeAR® framework may be employed by anybody with at least broad sustainability knowledge. Guidance is provided on how best practice appraisal would incorporate qualified and experienced sustainability professionals. (section 4)

### 1.5 Presenting SPeAR® to stakeholders

An interactive SPeAR® web App is available to assist in the communication of SPeAR® to stakeholders. The App presents the main features of SPeAR® in a visual, concise manner. The App can be viewed or downloaded from [www.oasys-software.com/spearapp](http://www.oasys-software.com/spearapp). In addition, training on how to use SPeAR® can be provided by Arup if required.

## 2 SPeAR® Framework

**Figure 2** SPeAR® diagram options



The images in Figure 2 show the different outputs that are possible from SPeAR®; with and without the Segments displayed; SPeAR® Social; and SPeAR® Environmental.

The SPeAR® framework recognises the integrated and often interdependent nature of different sustainability considerations. A standard SPeAR® appraisal will display a SPeAR® diagram with no segments; presenting the results as one holistic and integrated group of sustainability issues (see Figure 2). However, users can elect to break the appraisal down into broad subject headings (i.e., there is the option to ‘switch on or off’ all 3 segments - social, environmental and economic).

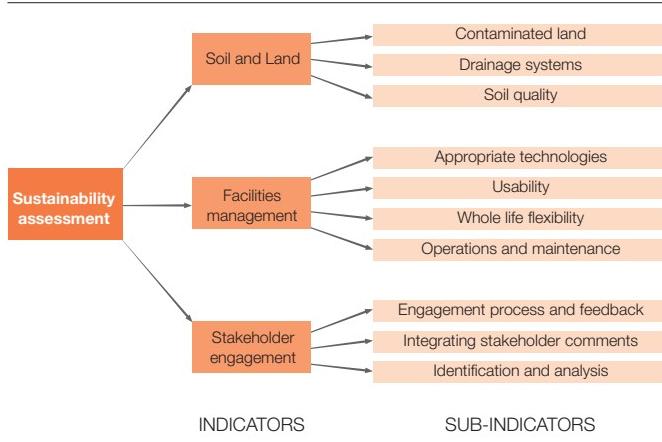
The indicators that make up a SPeAR® appraisal have been developed by a global group of experts and, in most circumstances, will all be relevant. However, with input from sustainability professionals, the framework can be modified to reflect the specific needs of a project context by assessing the material relevance of indicators (see section 3 for more detail).

## 2.1 Indicators and sub-indicators

The SPeAR® framework is based on a set of indicators that represent high-level sustainability issues. These indicators are represented via a ‘wedge’ within the SPeAR® diagram, as depicted in Figure 2. Each indicator is then broken into sub-indicators, which represent more specific sustainability topics (see Figure 3).

During a SPeAR® appraisal, it is the sub-indicators that are assessed using the SPeAR® performance rating. The sub-indicators are assigned a best and worst case description and a detailed set of specific questions, which project teams can use to determine the specific rating that each sub-indicator should receive.

**Figure 3** Conceptual representation of SPeAR® indicators and sub-dividers



In order to allow flexibility for users, there are two different categories of indicator:

**Core Indicator** – these appear automatically and will be relevant to most projects, most of the time.

**Additional Indicator** – these can be added to the list of indicators to be assessed, and will be relevant to some types of projects in some locations.

Sub-indicators are the detail that sit behind each indicator. Each indicator usually has approximately 3-6 sub-indicators. Again, there are two different categories:

**Primary Sub-Indicator** – these appear in bold and will be relevant to most projects, most of the time.

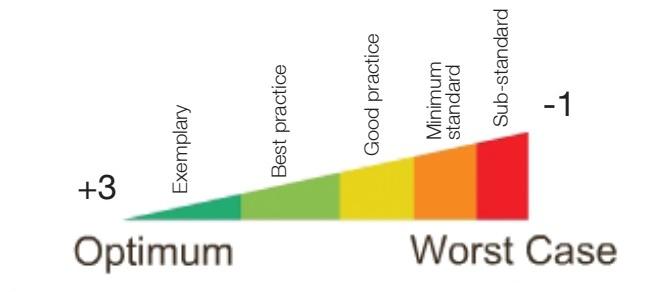
**Secondary Sub-Indicator** – these are included in the base case assessment, but may not be relevant to all projects in all locations.

## 2.2 Rating system

The SPeAR® performance rating system for indicators is shown in Figure 4 and is a graduated rating system based on a traffic light-type system. It has five different rating levels which range between +3 and -1.

A rating of +3 is coloured dark green and represents best case. It is located within the inner most regions of the SPeAR® diagram (much like the target of a bullseye on a dart board or in archery).

**Figure 4** Arup SPeAR® rating system



Minimum standard is set at a score of zero. This represents regulatory compliance, where it exists, or standard practice. Sub-standard or worst case is set at -1 and coloured dark red. This appears on the outer most rings of the SPeAR® diagram and could represent possible infringement of regulation and local or international laws.

A computer model sits behind the SPeAR® framework. This model aggregates the sub-indicator scores and assigns the average of these scores to the appropriate indicator.

Indicator scores are also coloured according to the SPeAR® performance rating system and are depicted within the SPeAR® diagram. SPeAR® allows project teams to present the SPeAR® diagram with or without the overarching segment headings of social, environmental and economic as depicted in Figure 2.

## 2.3 Trade-offs between indicators

SPeAR® also recognises and allows for the fact that there may be a natural ‘trade-off’ between many of the indicators within the framework. For example an improvement in energy consumption may require a significant investment, causing a change in the rating of both an economic and an environmental indicator.

### 3 Materiality

One of the strengths of the SPeAR® framework is that it offers project teams the flexibility to select which indicators are materially relevant to their specific project. SPeAR® also has a set of additional indicators which sit alongside the set of core indicators. These additional indicators can be included within any SPeAR® appraisal (based on a materiality test).

This enables the SPeAR® tool to be specifically tailored to each and every project, while at the same time enabling a certain level of comparison across the vast variety of different projects to which the tool can be applied. It is important to remember that a sustainability professional should assist with the materiality review when any indicators or sub-indicators are included or excluded from the appraisal.

The software also allows for indicators to be removed or for additional indicators to be created, again, following a review as to whether they are material.

#### 3.1 Materiality review

The materiality review has been designed in line with other global definitions of materiality representing best practice in sustainability appraisal and reporting. We have built on the GRI G3 guidelines, AccountAbility's Materiality Report and the 2010 report, *From Transparency to Performance*.

GRI defines materiality; “The information in a report should cover topics and indicators that reflect the organisation’s significant economic, environmental, and social impacts, or that would substantively influence the assessments and decisions of stakeholders.”

Each review should consider the following issues:

##### Risk

This ensures that indicators and subindicators are included where there are any possible financial, social and environmental risks, relating to the issue covered by the indicator, which a project may face. However minimal the risk may seem, it is important that all issues that may present a risk are considered within the appraisal.

##### Legal/regulatory/internal and external policy drivers

Indicators that relate to policy or legislation within the country or region where the project is taking place must be considered within a SPeAR® appraisal (e.g. if there

is legislation relating to air quality then this indicator cannot be removed). This relates to current laws or guidelines that may be of relevance to the project, as well as any expected legislation due in the near future. It ensures that appraisals consider the most up to date legal and policy requirements.

It is also important to assess whether indicators relate to internal policy formulated by the project promoter. For example, if the project promoter has an internal climate change policy, then the climate change indicator will be material to the appraisal.

##### Stakeholder concerns and societal trends

Issues that are of high importance to stakeholders, including communities, non-governmental organisations and the general public, and/or reflect social and consumer trends must be considered within a SPeAR® appraisal (e.g. a significant public campaign relating to biodiversity locally would mean that this indicator would be material).

##### Opportunity for innovation

It is important that indicators are not removed on the basis of limited negative impact, if the project has an opportunity to innovate and create a positive sustainability impact. This helps push the boundary of sustainability on a project.

##### Best practice/Peer-based norms:

It is important that indicators are selected that fully reflect the current practices within the industry in which a project operates. This ensures that issues that are reported on by an industry as current global best practice are included in a SPeAR® assessment.

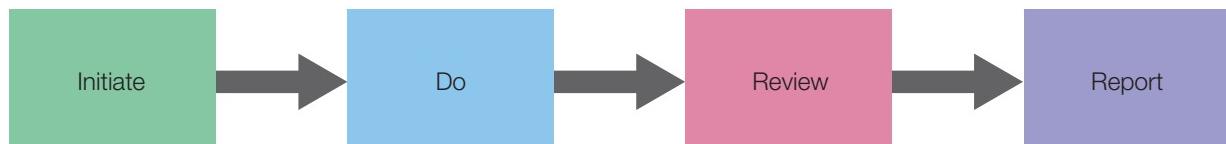
#### 3.2 Conducting the review

In order to understand the materiality of indicators, users should carry out a materiality test. For best practice, sustainability professionals should be consulted at this stage, in order to gain assistance in the determination of materiality. Each of the five issues outlined above should be considered. A justification will need to be made in the software if any changes are made to the core set of indicators. This justification may be a qualitative or quantitative assessment, but should refer to each of the five materiality issues outlined above.

Those indicators that are considered most material should be included in the appraisal. There is no absolute number of indicators that should be included (although somewhere between 12 and 32 will mean that the diagram retains a similar appearance).

## 4 Using SPeAR®

Figure 5 SPeAR® appraisal process



The key steps of a SPeAR® appraisal are summarised in Figure 5. A more detailed description of each step is provided in the following sections and within Figure 6.

It is important to note that people using the SPeAR® framework should already have a broad knowledge and appreciation of sustainability. For best practice, the appraisal should be checked or approved by a sustainability professional.

### 4.1 Initiate the Appraisal

#### Engaging with the project team

Engaging with the project team to ensure that they are aware of the project's sustainability aspirations and assisting them to understand the premise of SPeAR®, how it works, what it can and cannot do and the level of detail required to undertake an appraisal are important parts of every SPeAR® project. It helps to encourage the team's buy-in and manage their expectations early on. It is particularly important to emphasise the robust nature of the tool through the input of our broad range of experts and the level of data information and collection that will be required for an appraisal. This ensures that they understand that the value in a SPeAR® appraisal lies not just in the diagram, which they receive at the end of the process, but also in the appraisal report, which should include recommendations for improvement.

#### Defining project boundaries and objectives

It is necessary to understand the overall scope and objectives of the project in order to define the boundary for the SPeAR® appraisal (i.e. what is and what is not included and the level of detail of the appraisal). This stage should be carried out in consultation with the project team and the boundaries and scope of the appraisal should be agreed before it proceeds.

The definition of the appraisal boundary may be not straight forward as it may be different from the project boundary. Some projects may result in both direct and

indirect positive and negative impacts and often have broader social, environmental and economic footprints. The more broadly the appraisal boundary is defined, the more likely the analysis will reflect the full impacts and opportunities associated with the project. However, the trade-off is that a broader boundary makes the analysis more complicated.

Some key considerations when defining the appraisal boundary are:

**Geographical coverage:** What are the physical boundaries of the project?

**Sphere of influence:** What is the potential sphere of influence environmentally, socially and economically?

**Scale:** Is the appraisal at a project/programme level or is it at settlement, regional or even national level?

**Time:** Does the project comprise several phases or is it intended to be replicated or scaled up in the future? If so, will the appraisal address only the current project phase or both the current and future phases?

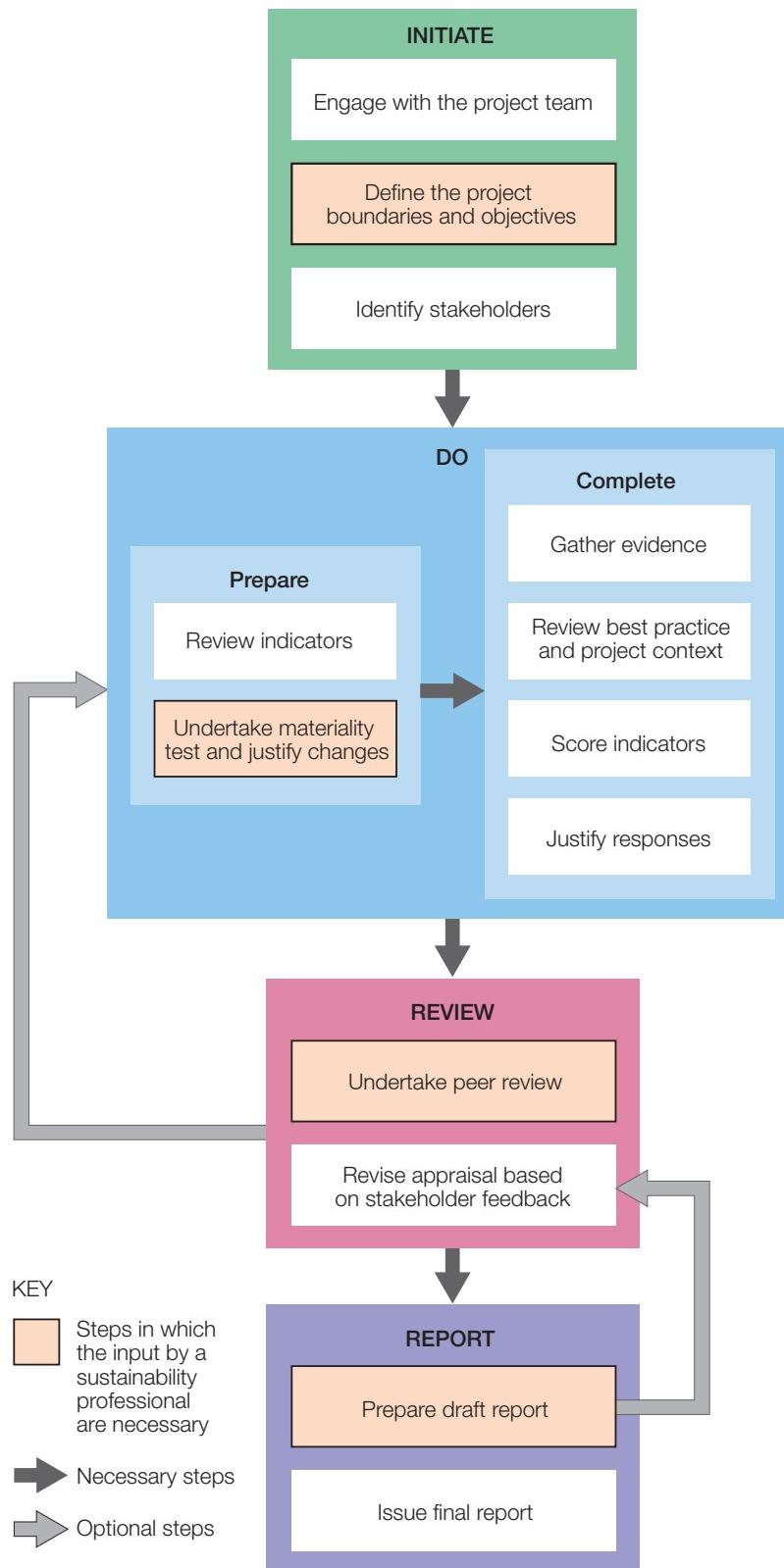
#### Identify stakeholders

A stakeholder is any individual, community group or organisation with an interest in the outcome of a project. In order to understand the project context, it is important to identify the stakeholders and their views. More guidance can be found within the tool under the 'stakeholder engagement' indicator.

Stakeholder identification is also important in determining the materiality of indicators (section 3.1).

Identifying stakeholders is critical for understanding the impacts, risks and opportunities generated by the project. The methodology for carrying out the appraisal needs to be clear on the extent to which views, opinions and perspectives of all stakeholders are considered.

**Figure 6** Detailed SPeAR® process



## 4.2 Prepare the appraisal

### Review indicators and sub-indicators

Overall, there are 24 core SPeAR® indicators and 10 pre-identified additional indicators (see Appendix A for the full list). Each indicator (both core and additional) has a set of primary and secondary sub-indicators. During the initial phases of any SPeAR® appraisal the core and additional indicators and primary and secondary sub-indicators must be reviewed and a materiality review applied to determine which are of relevance to the project (see Section 3).

An important aspect of the SPeAR® framework is that it allows teams the flexibility to create their own additional indicators and sub-indicators if need be, but again, this is subject to a materiality review and should not be required in most project situations (see below).

The set of indicators currently available within the SPeAR® tool has been carefully compiled by qualified sustainability professionals and was developed to incorporate sustainability issues which would cover the majority of projects. It is however acknowledged that certain projects will require changes within the indicator set developed as part of the tool.

Users who feel that an indicator is needed in addition to those (core and additional) pre-identified indicators can include one. However, they should closely review the current indicator and sub-indicator descriptions first, as they may find that the aspect they want to cover has already been addressed within the details of one of the pre-identified items.

The set of indicators currently available within the SPeAR® tool has been carefully compiled by qualified sustainability professionals and was developed to incorporate sustainability issues which would cover the majority of projects. It is however acknowledged that certain projects will require changes within the indicator set developed as part of the tool.

Users who feel that an indicator is needed in addition to those (core and additional) pre-identified indicators can include one. However, they should closely review the current indicator and sub-indicator descriptions first, as they may find that the aspect they want to cover has already been addressed within the details of one of the pre-identified items.

Prior to altering the SPeAR® framework it is important to note that removing too many sub-indicators reduces the robustness of the analysis. Many projects have important indirect benefits and impacts that may not be immediately obvious. If in doubt, do not remove the indicator or sub-indicator. The identification of relevant regulation and best practices is a crucial element in any SPeAR® appraisal and the more effort that is put into this task, the more accurate and robust the SPeAR® appraisal will be.

SPeAR® enables users to elect what type of appraisal they would like to perform. In appropriate circumstances, users may elect to undertake a SPeAR® appraisal that just covers one segment; for example, SPeAR® Environmental which will incorporate environment indicators only. In this case it is important to be clear that this will not represent a sustainability appraisal, but instead an Environmental, Social or Economic appraisal.

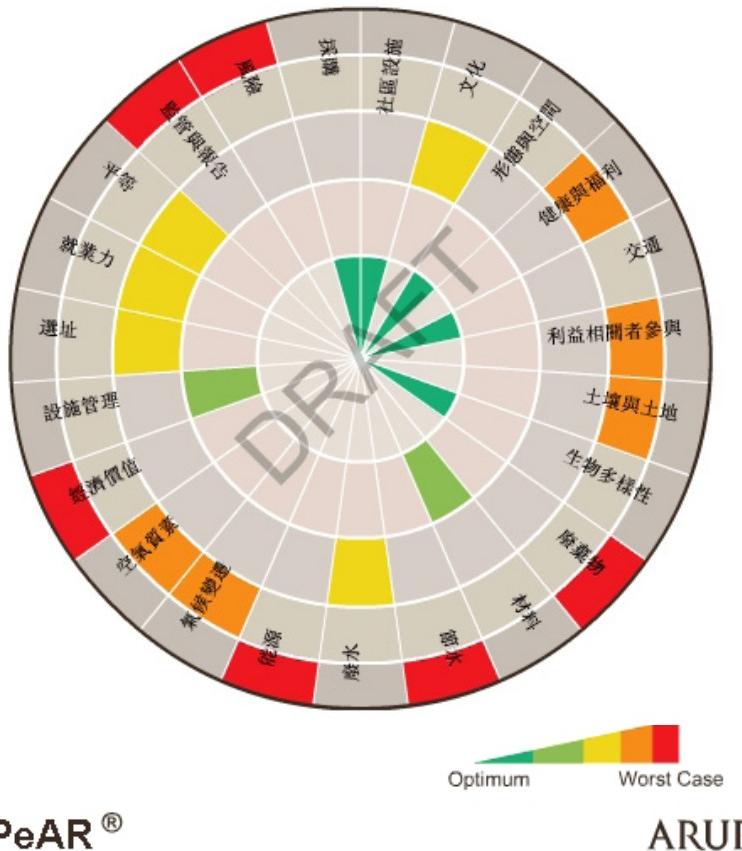
## 4.3 Complete the appraisal

### Gather evidence

Comprehensive data and information gathering is fundamental to the quality of any SPeAR® appraisal and often takes the most time. Wherever possible, data should be cross-referenced to key project documentation or validated by data collected from third party sources. The data can be collected (or verified) through literature searches, desktop study, review meetings, site visits and consultation with key stakeholders. Data collected from socio-economic surveys and other appraisals should be checked to ensure that the data collection was methodologically and statistically sound.

The amount of time needed for data and information collection can vary, depending on the information readily available and background literature review required for the project. A useful way to collect a large amount of data in a short period of time is to hold a SPeAR® workshop with relevant stakeholders. This can help to engage project participants, brainstorm project improvements and identify any data gaps currently existing within the project (particularly if the workshop is held early on in the project). It is also a method for extracting anecdotal evidence and cultural or societal information that has not previously been documented in any form.

**Figure 7** SPeAR® output in Chinese



### Review best practice and project context

Once the project has selected the appropriate indicators and sub-indicators, a review of the best case scenarios is necessary for each of the sub-indicators. This is necessary for all projects, but particularly relevant for projects operating in niche markets or where there are specific best practice guidelines or case studies that have been recently released.

It is at this stage that the project team must also consider and investigate all local, regional and national regulatory frameworks, legislation and guidelines. This is necessary to calibrate the SPeAR® performance rating system which sets regulatory compliance at zero (where it exists).

### Score indicators

Once the data has been collected and best practice incorporated into the appraisal model, an initial appraisal should be undertaken. This appraisal should consider inputs and views from all relevant stakeholders to allow for a balanced view of the project. Each sub-indicator should be considered in turn and allocated a score following the process outlined in Section 5.

Scoring of indicators will benefit from input by topic experts, particularly where there are specific regulatory

requirements that need to be met. **This is particularly important in the case of health and safety. Where included, this indicator score must be based on input from a health and safety professional.**

### Justify response

A descriptive justification must be provided for each score selected, referring to relevant evidence that has been gathered to complete the appraisal. The justification should focus on which sustainable outcomes have been achieved for each indicator as well as those areas where more work is required. It is the justification that will ensure the robustness of the appraisal and it is also the content most important for reporting purposes. The justification will assist with understanding why a specific score has been received and what areas most require improvement.

In the data entry screen, users should enter 3 key pieces of information: the justification for the score (as outlined above); data sources; and observations.

### Output Language

Users operating in a country where English is not the predominate language, can opt to change the SPeAR® output diagram into a different language (see Figure 7). The languages currently available in the SPeAR®

- Arabic
- Chinese (traditional and simplified)
- Danish
- German
- Italian
- Japanese
- Montenegrin
- Polish
- Russian
- Spanish
- UK English
- US English
- Welsh

software include:

Only the output diagram is translated. The content of SPeAR is only available in UK English.

## 4.4 Review

### Commission review by sustainability professionals

For best practice, it is advised that every appraisal be subjected to a thorough review by sustainability professionals. This should incorporate a review of the indicators used and the justification provided for the scoring of each of the sub-indicators.

Stages at which a sustainability professional should be involved in a SPeAR® appraisal are illustrated in Figure 6 and include:

- During the definition of the project boundaries and objectives
- Whilst undertaking a materiality review
- In the preparation of the report

A sustainability professional is defined as someone who can demonstrate the following competencies and experience:

- Strong broad sustainability skills including a technical understanding of multiple elements.
- Relevant professional membership (e.g. Institute of Environmental Management and Assessment)
- Proven sustainability experience and track record working on multi-disciplinary projects.

### Revise SPeAR® based on stakeholder feedback

The quality of the SPeAR® appraisal is likely to be strengthened if the outputs of an appraisal are communicated to members of the project team and project stakeholders, who are then able to comment and provide additional information. Should additional information be provided, the scores and justification notes within the appraisal should then be updated in the SPeAR® software. This iterative process will improve the quality of the analysis, support informed decision making and help generate shared ownership and agreement on the potential areas of the project that need modification or review.

## 4.4 Report

### Prepare draft report

The project outputs are generated by following the software instructions in Section 5. In addition to this, it is recommended that the user produces a concise written summary of the SPeAR® appraisal and the key findings. Such a report would typically contain the following:

**Introduction:** State the purpose of the appraisal, who it has been carried out by, and at what stage in the project lifecycle.

**Project brief and scope:** Briefly describe the overall objectives and scope of the project, identifying key stakeholders.

**Methodology:** Provide background to what SPeAR® is and how it works. If applicable, include justification for omitting/adding particular indicators or sub-indicators based on materiality and the level of involvement of other sustainability and topic specific experts. Describe the methodology/approach taken for the project. List the stakeholders involved, the consultations undertaken with them and any workshops held. Discuss the information which was used as the basis for the appraisal.

**Discussion:** Include the SPeAR® diagram and analysis of any key strengths and weaknesses of the project, highlighting any information gaps. We suggest that this is undertaken as a selective discussion of significant issues where scores are strongly positive or strongly negative, or focus on indicators/sub-indicators that are particularly important for the project.

**Recommendations:** This section is a vital part of the appraisal. It should provide recommendations on where improvements can be made to the project in order to enhance sustainable outcomes.

**Appendix:** If appropriate, include a tabulated output from the SPeAR® appraisal, outlining: strengths and weaknesses against each core indicator, any significant case studies used to set best case for the framework and a summary table of the indicator scores and justification.

The above list is for guidance only, and it can be altered to suit the project requirements. Discussions should be held with the client on the approach to engaging with stakeholders (see the section titled ‘Revise SPeAR® based on stakeholder feedback’).

### Issue final report

Once teams have undertaken an appropriate review of the draft report, a final report should be produced, reviewed by a sustainability professional and issued.

## 5 Navigating the Software

Figure 8 Start-up window



### 5.1 Getting started

The start-up window that will open initially allows users to:

- Create a new file
- Open an existing file
- Select a recent file to open
- Run a demo
- View on-line help
- Visit the Oasys website

If you need to revisit this page at a later stage, you can access it by going to 'File' and 'Startup dialog'

Once the software has been opened, you will see the main software interface. A new assessment can be initiated by going to 'File' and selecting the Option 'New'. To open an existing SPeAR® appraisal, select 'File' and 'Open' or 'Recent Files'. A dialogue box will allow you to select the file.

To add the project name and details select 'Data' and 'Job details' and a window will appear as shown in Figure 9.

### 5.2 Toolbar

The toolbar can be used for quick access to some of the menu buttons, see below for details:

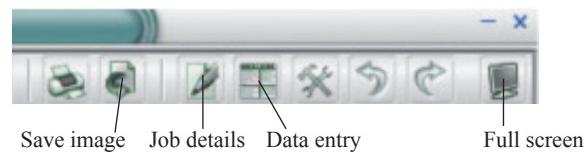
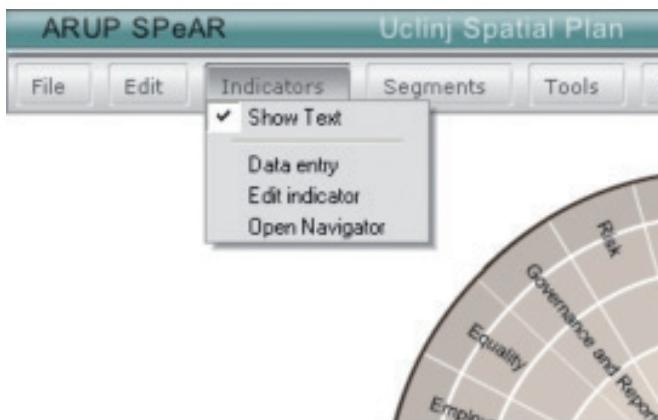


Figure 9 Job details window

A detailed screenshot of the 'Job details' window. It includes fields for 'Job Number' (07783-37), 'Prepared By' (AC), 'Job Title' (Uclini Spatial Plan), 'Subtitle' (SPeAR), 'Heading' (Appraisal), and 'Notes' (n/a). A scrollable 'SPeAR checklist' section contains items like 'Job details entered' (checked), 'All indicator modifications have been justified', 'All Indicators scored', 'Notes written for all indicators', 'Document Checked', and 'Document Approved'. At the bottom are buttons for 'Get Details', 'Clear', 'Ok', and 'Cancel'.

**Figure 10** Selecting ‘Edit indicator’



### 5.3 Selecting indicators

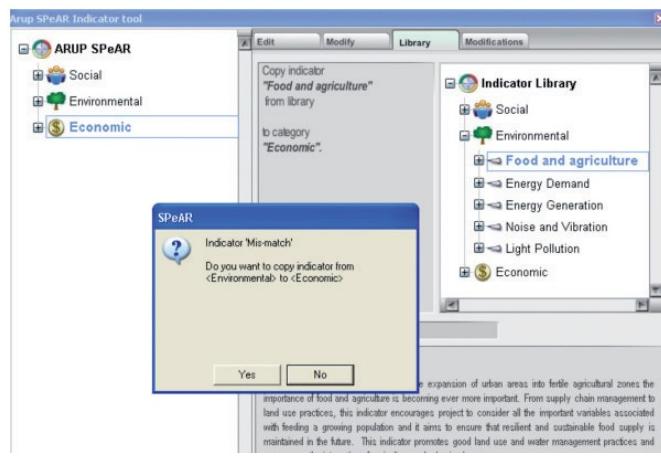
Indicator modifications may be required if it is felt that some indicators are not material, or if there are additional indicators that are material. By selecting Indicators and ‘Edit Indicator’ (as shown in Figure 10), you will get access to the Edit Indicator tool, where you can:

#### Add indicators or sub-indicators from the indicator library

You can look through the additional indicators and sub-indicators available in the ‘Library’. In order to add an indicator or sub-indicator, you must select both the sub-indicator/indicator you want to add and the location that you want to move it to and press ‘copy’. A message will appear in the middle to let you know the action that you are about to carry out; for example, “Copy ‘Indigenous Culture’ from library to category ‘Social’”.

The software will warn you if you are moving an indicator to an unexpected location, but it will not prevent you from doing this (see Figure 11).

**Figure 11** Edit indicator window

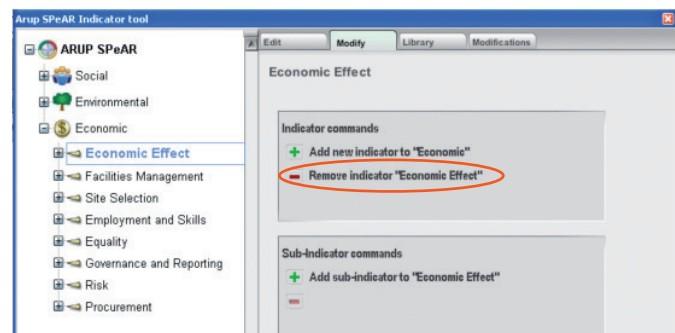


#### Deleting and adding indicators or sub-indicators

Indicators or sub-indicators can be added or deleted by selecting the ‘Modify’ tab in the Edit Indicator tool.

Once you have opened the ‘Modify’ tab, in order to delete an indicator or sub-indicator you will need to select it on the left and you will then be given the option to remove your selected indicator or sub-indicator (see the red circle in Figure 12). Any standard indicator that is deleted will be moved to the indicator library, in case you make a mistake and need to add it back at a later stage.

**Figure 12** ‘Modify’ tab



To add an indicator, you will also need to open the ‘Modify’ tab and select the segment or indicator group to which you would like to add an indicator or sub-indicator. You will then be given the option of adding a new indicator or sub-indicator.

#### Edit the text of any indicator or sub-indicator

The text in any indicator or sub-indicator can be edited, if there are slight changes that need to be made to reflect the context of the project. To do this, users need to select the ‘Edit’ tab within the indicator tool. This opens up a window for all of the text for a given sub-indicator, which can be edited as necessary simply by clicking on the appropriate text box (including the indicator title).

#### Justifications

Any change that is made to the indicators or sub-indicators at this stage will need to be justified to ensure a robust appraisal is carried out and that the materiality test has been thorough. Each of the five elements of the materiality test need to be considered. See section 3 for more detail. Modifications can be justified as you work your way through the changes, or can all be justified by going to the ‘modifications’ tab within the Edit Indicator Tool. It should be noted that you will need to justify all changes that you make to the core indicators before you can remove the ‘draft’ mark from your diagram, and anyone checking or approving an appraisal will need to check that this has been done.

**Figure 13** Data entry

Category	Best Case	Worst Case	Note Column
Education	<ul style="list-style-type: none"> <li>Does the project facilitate access of local communities to high quality, affordable educational facilities in the vicinity?</li> <li>Does the project enhance and link with organisations providing high quality and affordable skills and vocational training available locally?</li> <li>Does the project enhance the access of all to primary school and/or vocational or skills training?</li> </ul>	No primary education and skills training provisions made available locally and the project damages existing linkages.	Click to enter notes.
Healthcare	<ul style="list-style-type: none"> <li>Does the project improve or provide for a local health care facility which offers affordable medical care to all groups?</li> <li>Does the local health care facility/centre have the required manpower and equipment and medicinal drugs?</li> <li>Does the project consider the availability of funding to run the health care program?</li> <li>Does the project put strain on existing health facilities?</li> </ul>	The project increases pressure on existing health care facilities and does not consider primary health care.	Click to enter notes.
Recreation	<ul style="list-style-type: none"> <li>Does the project improve or provide local recreational facilities, including e.g. leisure facilities, green spaces, cultural facilities?</li> <li>Does the project facilitate access of local communities to high quality, affordable recreational facilities in the vicinity?</li> <li>Does the project provide space for or actively promote community groups or activities?</li> </ul>	No provision for recreational or social amenities or green spaces, and existing provisions are disconnected from or made unaffordable to communities.	Click to enter notes.
Energy	<ul style="list-style-type: none"> <li>Does the project improve access to modern fuel/energy sources like electricity for the purpose of cooking, lighting and heating/cooling?</li> <li>Does the project consider issues of convenience and safety related to the provision of electricity, such as domestic connections and street lighting to facilitate pedestrian movement?</li> <li>Does the project consider how clean fuel sources could increase indoor air quality and therefore outdoor health?</li> </ul>		Click to enter notes.

## Undoing Changes

If you need to undo a change that has been made to the indicators (e.g. because of a mistake or a change in scope etc), then you will need to enter the modifications tab and select the ‘undo arrow’. This change will not require justification.

## 5.4 Saving data

Before entering data, the new appraisal should be saved by going to ‘File’ and selecting ‘Save As’. A dialogue box will allow the user an option of selecting the name and location for saving the appraisal.

As data is entered, it can be saved at any time by clicking on the ‘Save’ button on the dialogue box. Once saved, the appraisal can be closed and recommenced at a later time.

## 5.5 Scoring sub-indicators

Sub-indicators can be scored by selecting ‘Indicators>Data entry’ from the menu. This opens the dialogue screen for SPeAR® data entry. Clicking on the ‘Data entry’ button in the toolbar will also open the same screen. Alternatively, you can double-click on any of the indicators in the diagram to open the data entry dialogue. The data entry screen (see figure 13) will display current category, indicator and its constituent sub-indicators. In addition to the indicator name, it also displays ‘Score’ buttons, ‘Best case’, ‘Worst case’ and ‘Notes’.

You can change a score by clicking on a score button colour swatch for that specific sub-indicator. You can select any score from -1 to 3:

- 1 = sub-standard
- 0 = minimum standard
- 1 = good practice
- 2 = best practice
- 3 = exemplary

The score colour is also shown on the right-hand column of the data entry window. Based on the scores, the average score is calculated and displayed in the diagram. Every score is denoted by a colour and the diagram on the screen updates automatically as each score is entered.

The score for a particular indicator is determined by the relative performance of a project or proposal against a pre-defined best case and worst case. The best case is a qualitative statement that represents the best possible outcome of an indicator. Similarly, the worst case represents a negative outcome or non-compliance.

Each score entered must be justified through the ‘notes’ on the right. This is where users should also reference the evidence for giving a particular score and provide any additional observations. To edit notes for a particular indicator, click in the specified area and write comments. The same thing can be done by right-clicking in the notes area and selecting ‘Edit notes’.

**Figure 15** Navigator



You can also save the changes here by clicking on the ‘Save’ button. To maximise/restore data entry, click on the button at the top-right of the window.

You can also move directly from the data entry screen to delete or edit an indicator by right clicking on the appropriate sub-indicator and selecting ‘delete sub-indicator’ or ‘edit sub-indicator’.

## 5.6 Navigating between indicators

Click through the tabs at the top of the Data Entry window to navigate between indicators, or the icons above these to navigate between segments.

You can also open a navigator wheel by clicking on ‘indicators’ and then ‘open navigator’. The navigator wheel (see figure 14) can be docked to the data entry screen within SPeAR® to make it easy for you to move between indicators, by simply clicking on it.

## 5.7 Completing SPeAR®

Once your appraisal has been completed, it will need to checked and approved. At least one of these reviews will need to be carried out by a sustainability professional.

Reviewers may find it easiest if you generate a report for them, rather than needing access to the software. A table with the outputs from the software can be generated by selecting ‘File>generate report’.

This can be either a word or excel file. In each format, the following options are available:

**Detailed report** - containing best and worst cases along with questions for each sub-indicator

**Concise report** - best and worst cases only

**Social** - social sub-indicators only

**Environmental** - environmental sub-indicators only

**Economic** - economic sub-indicators only

An appraisal cannot be completed if there are outstanding gaps. The ‘job details’ screen has a useful summary checklist of each of the tasks to be carried out. (see figure 15) This can be accessed by clicking on ‘file’ and then ‘job details’.

Once a task is completed then a tick will appear to the right. This makes it easy to see where you still need to make changes. Where there are just a few modifications that need justifying or indicators that need scoring left these will be displayed.

Once the appraisal has been checked and approved then it will need to be signed off in the ‘job details’ window. Once this has been done, then the ‘draft’ watermark will be removed from the chart. If subsequent changes are made following approval then the ‘draft’ will reappear.

**Figure 16** Checklist in Job details window

SPeAR checklist :	
Job details entered	✓
All indicator modifications have been justified	
All Indicators scored	
Notes written for all indicators	
Document Checked	
Document Approved	

# Appendix A

## Full Indicator Set

Segment	Indicator	Sub-Indicator
<b>Core Indicators</b>		
Social	<b>Community Facilities</b>	Recreation Education Healthcare Retail
	<b>Culture</b>	Respecting socio-cultural identity Cultural and religious facilities Use of environment Intergenerational and gender practices Archaeology and local heritage Art
	<b>Form and Space</b>	Density, height, scale and massing Public, private and communal space Landscape, townscape and visual impact Security Connectivity Microclimate
	<b>Stakeholder Engagement</b>	Identification and analysis Engagement process and feedback Integrating stakeholders comments
	<b>Health and Wellbeing</b>	Access to green space Community cohesion Institutions and social networks Indoor environment Social vibrancy
	<b>Transport</b>	Public transport infrastructure Pedestrian design and facilities Cycle design and facilities Waterways Freight traffic (logistics) Low emission vehicles Private vehicle use Air travel

# Appendix A

## Full Indicator Set

<b>Segment</b>	<b>Indicator</b>	<b>Sub-Indicator</b>
<b>Additional Indicators</b>		
	<b>Health and Safety</b>	Health and Safety on construction sites
		Health and Safety in design
		Health and Safety in operation
	<b>Sustainable Behaviours</b>	Encouragement
		Engagement
		Leadership
		Enabling
	<b>Indigenous Culture</b>	Socio-cultural identity
		Local heritage
		Cultural and religious facilities
		Use of environment
		Intergenerational and gender practices
		Archaeology
		Art
	<b>Non-indigenous Culture</b>	Socio-cultural identity
		Local heritage
		Cultural and religious facilities
		Use of environment
		Intergenerational and gender practices
		Archaeology
		Art
<b>Core Indicators</b>		
<b>Environmental</b>	<b>Soil and Land</b>	Contaminated land
		Soil quality
		Drainage systems
	<b>Biodiversity</b>	Protected species and habitats
		Conserving and improving local biodiversity
		Habitat connectivity
	<b>Waste</b>	Construction waste management plan
		Waste in operation
		Hazardous/ special waste
		Composting
		Designing out waste
	<b>Materials</b>	Materials efficiency in design
		Use of recycled or reused materials
		Environmental and sustainability impacts of materials
		Healthy materials

# Appendix A

## Full Indicator Set

Segment	Indicator	Sub-Indicator
<b>Core Indicators</b>		
	<b>Water</b>	Water pollution Water resources Wastewater treatment & disposal Water sources Water monitoring Water supply Construction
	<b>Energy</b>	Energy supply Energy conservation and efficiency Energy monitoring Daylighting
	<b>Climate Change</b>	Carbon management plan Social impacts of climate change Physical impacts of climate change Carbon sequestration Economics of climate change
	<b>Air Quality</b>	Ambient air quality Direct emissions Indirect emissions Ozone depleters

# Appendix A

## Full Indicator Set

Segment	Indicator	Sub-Indicator
<b>Additional Indicators</b>		
	<b>Food and Agriculture</b>	Land use Resilience Resource and synergies Community food growing
	<b>Energy Generation</b>	Renewables Low carbon energy Energy security
	<b>Energy Demand</b>	Lighting Heat demand Cooling/ ventilation Construction energy reduction Energy monitoring Industrial energy reduction Appliances ICT
	<b>Noise and Vibration</b>	Construction noise Operational noise (internal to site) Operational noise (external) Vibration
	<b>Light Pollution</b>	Street lighting Indoor lighting Lighting in open spaces
<b>Core Indicators</b>		
<b>Economic</b>	<b>Facilities Management</b>	
	Usability Appropriate technologies Whole-life flexibility Operation and maintenance	
	<b>Governance and Reporting</b>	
	Monitoring and evaluation Information disclosure and reporting Strategy Risk management	
		Donations to voluntary and community organisations

# Appendix A

## Full Indicator Set

Segment	Indicator	Sub-Indicator
<b>Core Indicators</b>		
	<b>Economic Effect</b>	Value for money Distortions to local economy Vitality and regeneration Carbon pricing
	<b>Employment and Skills</b>	Labour standards Employment creation Training Access to finance Employment creation in construction Employment creation in operation Social mobility
	<b>Site Selection</b>	Site location Planning intent Diversity/mixed use
	<b>Procurement</b>	Local sourcing Global sourcing Procurement strategy
	<b>Equality</b>	Affordability Designing for equality Impacts and benefits Land tenure Displacement
<b>Additional Indicators</b>		
	<b>Informatics</b>	Smart resource systems Social interaction Public information Transport Environmental quality
	<b>Innovation</b>	Research and innovation Knowledge exchange Replication R&D spend

## Appendix B

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- Initiative for Responsible Investment in conjunction with Arup, From Transparency to Performance, 2010, [http://www.arup.com/Publications/From\\_Transparency\\_to\\_Performance.aspx](http://www.arup.com/Publications/From_Transparency_to_Performance.aspx) (accessed March 2011)

## SPeAR® Support Services from Arup

Due to the highly multidisciplinary and complex nature of sustainability, enlisting the help of experienced professionals to review and critique a SPeAR® appraisal will increase the robustness of the assessment. With over 10 years experience of implementing SPeAR®, Arup has considerable expertise in assessing and managing sustainability performance. As such, Arup offers a number of services that may be called on to complement and/or facilitate a SPeAR® appraisal. A full list of these services can be found below:

### Service

#### Training

Arup offers a range of SPeAR® training services, including beginner, intermediate and advanced classes. Such training can be delivered on a one-to-one basis or as morning/whole day workshop for larger groups. Training can be delivered at a location to suit your needs. We also offer training via video-conference.

#### Advice & Support

Arup has a number of sustainability professionals with considerable experience of implementing SPeAR® on projects. We can offer you advice and support on a wide

range of issues; from materiality to data gathering and scoring, to improving your sustainability performance in relation to one, or a number of SPeAR® headings.

#### Full SPeAR® Implementation

Having implemented SPeAR® on over 100 projects, in over 10 countries, Arup can take the lead on a SPeAR® appraisal and implement it on behalf of or in collaboration with you. Entirely flexible, Arup can be brought it to add value at any stage in the project lifecycle, from the concept and design stage through to the completion, operation and evaluation phase.

#### SPeAR® Review/Robustness Assessment

Finally, Arup is well placed to offer a quick or in-depth SPeAR® review service. This service may be valuable at a number of stages in the SPeAR® process, as mentioned in section 4.3.

#### A Global Service, delivered locally

Arup can offer all of the services above from most of our local offices. With offices in over 37 countries, Arup can offer services to reflect local needs and context, using our global knowledge base.

## Technical Queries & Feedback

In the first instance, please direct all technical queries to  
[spear@arup.com](mailto:spear@arup.com)

We also aim to continually build-on and improve  
SPeAR® and therefore we would welcome any feedback  
you have as a user from applying the tool to a project.  
Again, please email any comments to [spear@arup.com](mailto:spear@arup.com).

